T05020 T6692760

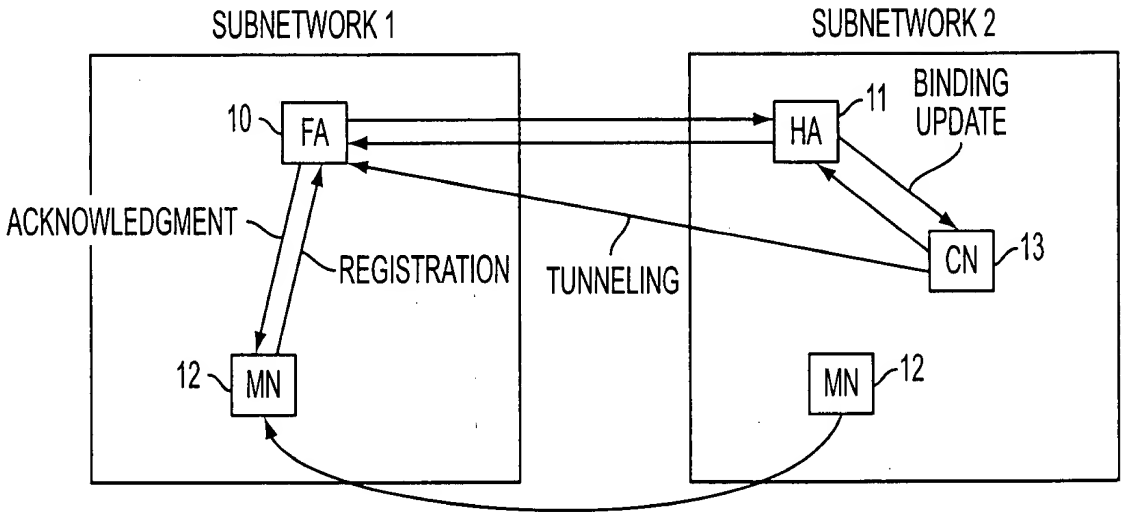

FIG. 1

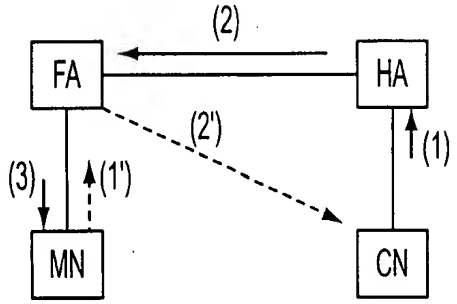
(2)
FA
HA
(2')
(1)
(3)
(1')
MN
CN

FIG. 2A

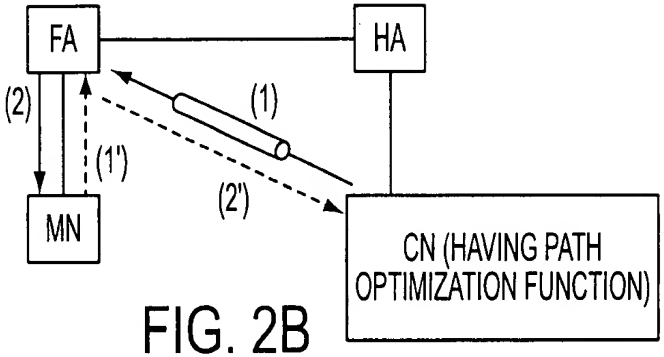
FA
HA
(2)
(1)
(1')
(2')
MN
CN (HAVING PATH OPTIMIZATION FUNCTION)

FIG. 2B

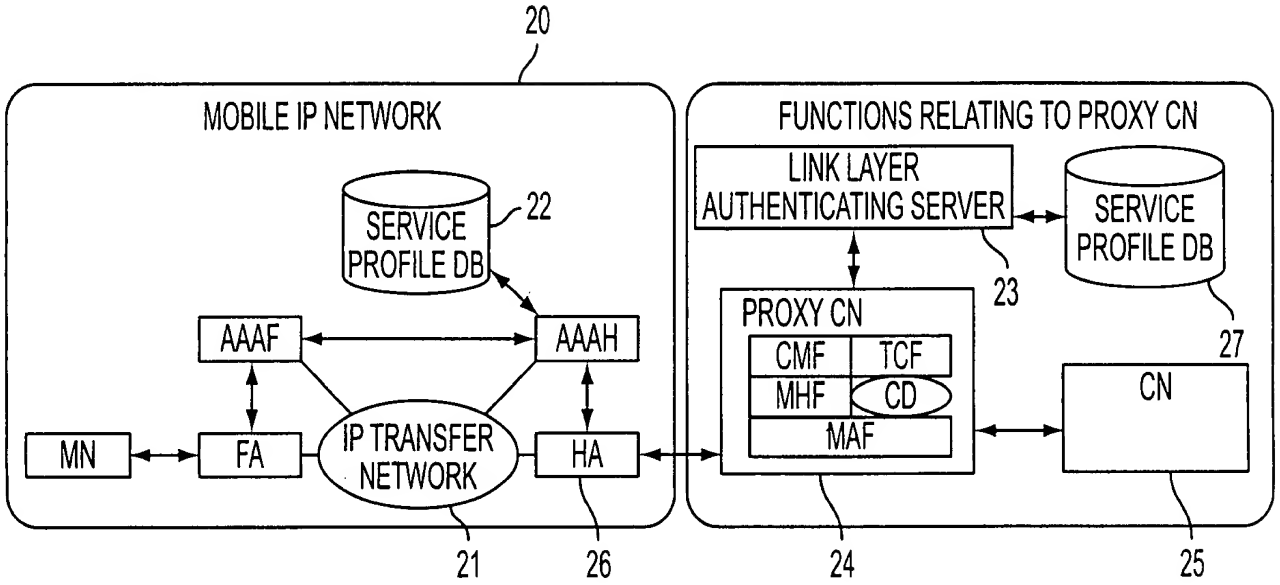
20
MOBILE IP NETWORK
FUNCTIONS RELATING TO PROXY CN
SERVICE PROFILE DB
22
LINK LAYER AUTHENTICATING SERVER
SERVICE PROFILE DB
23
27
AAAF
AAAH
PROXY CN
CMF
TCF
MHF
CD
MAF
CN
MN
FA
IP TRANSFER NETWORK
HA
21
26
24
25

FIG. 3

CONSTITUENT INFORMATION	DETAILED CONSTITUENT INFORMATION	DESCRIPTION
CONTROL TARGET PACKET INFORMATION	TRANSMISSION SOURCE ADDRESS	HOME ADDRESS OF MOBILE NODE, ETC.
	TRANSMISSION SOURCE PORT NO.	PORT NUMBER IN IP HEADER
	TRANSMISSION DESTINATION ADDRESS	RECEPTION DESTINATION ADDRESS IN IP HEADER
	TRANSMISSION DESTINATION PORT NO.	RECEPTION DESTINATION PORT NO. IN IP HEADER
ROUTING/PACKET EDITING INFORMATION	ENCAPSULATING(ENCRYPTING) METHOD	
	TRANSFER DESTINATION ADDRESS	TRANSMISSION DESTINATION ADDRESS AS A RESULT OF CONTROL
	TOS (TYPE OF SERVICE) VALUE OF IP	SERVICE TYPE
	DE-ENCAPSULATING INSTRUCTION	
INDIVIDUAL CONTROL INFORMATION	NEXT SERVICE CONTROL TYPE	INFORMATION FOR APPLICATION OF IP TRAFFIC CONTROL SUCH AS DIFF-SERV, ETC.

FIG. 4

T09020 T6694260

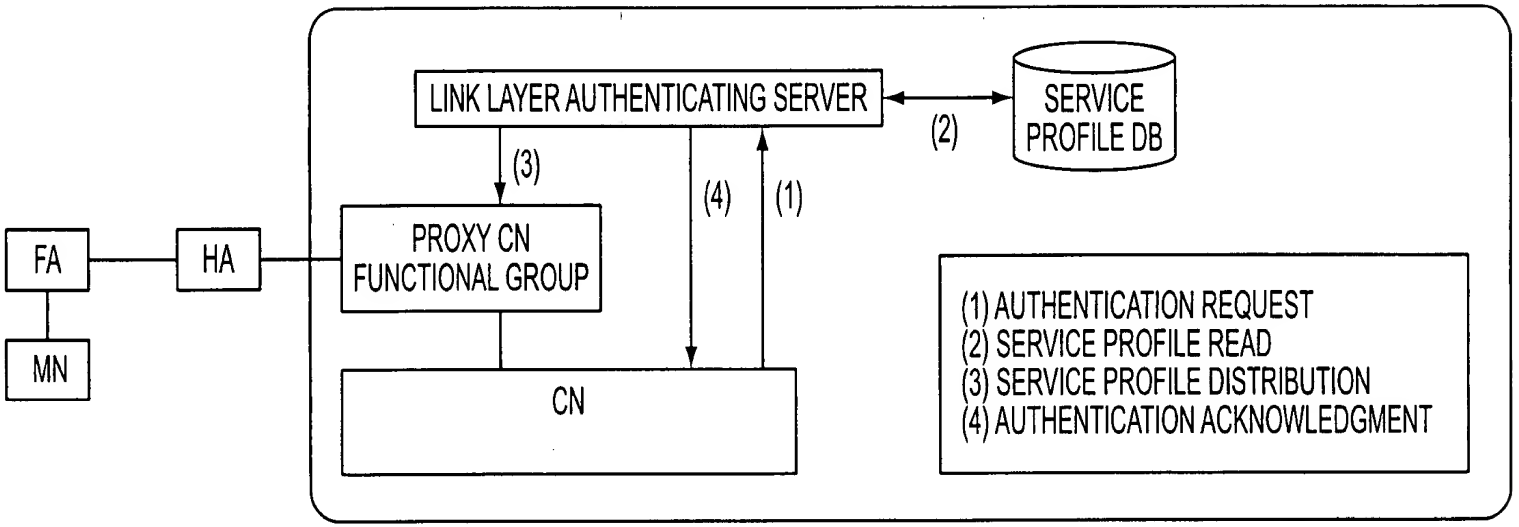

FIG. 5

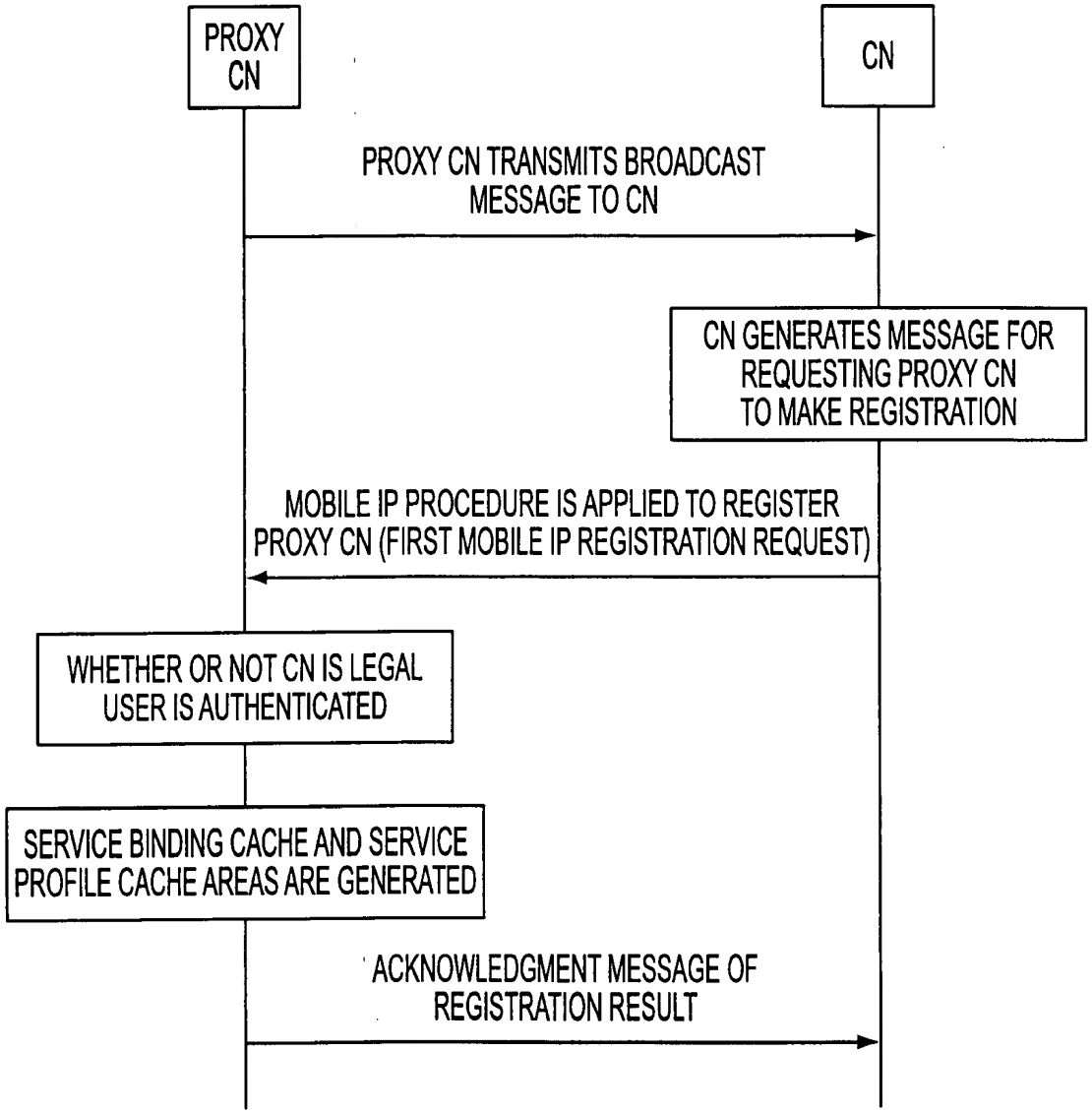
PROXY CN
CN
PROXY CN TRANSMITS BROADCAST MESSAGE TO CN
CN GENERATES MESSAGE FOR REQUESTING PROXY CN TO MAKE REGISTRATION
MOBILE IP PROCEDURE IS APPLIED TO REGISTER PROXY CN (FIRST MOBILE IP REGISTRATION REQUEST)
WHETHER OR NOT CN IS LEGAL USER IS AUTHENTICATED
SERVICE BINDING CACHE AND SERVICE PROFILE CACHE AREAS ARE GENERATED
ACKNOWLEDGMENT MESSAGE OF REGISTRATION RESULT

FIG. 6

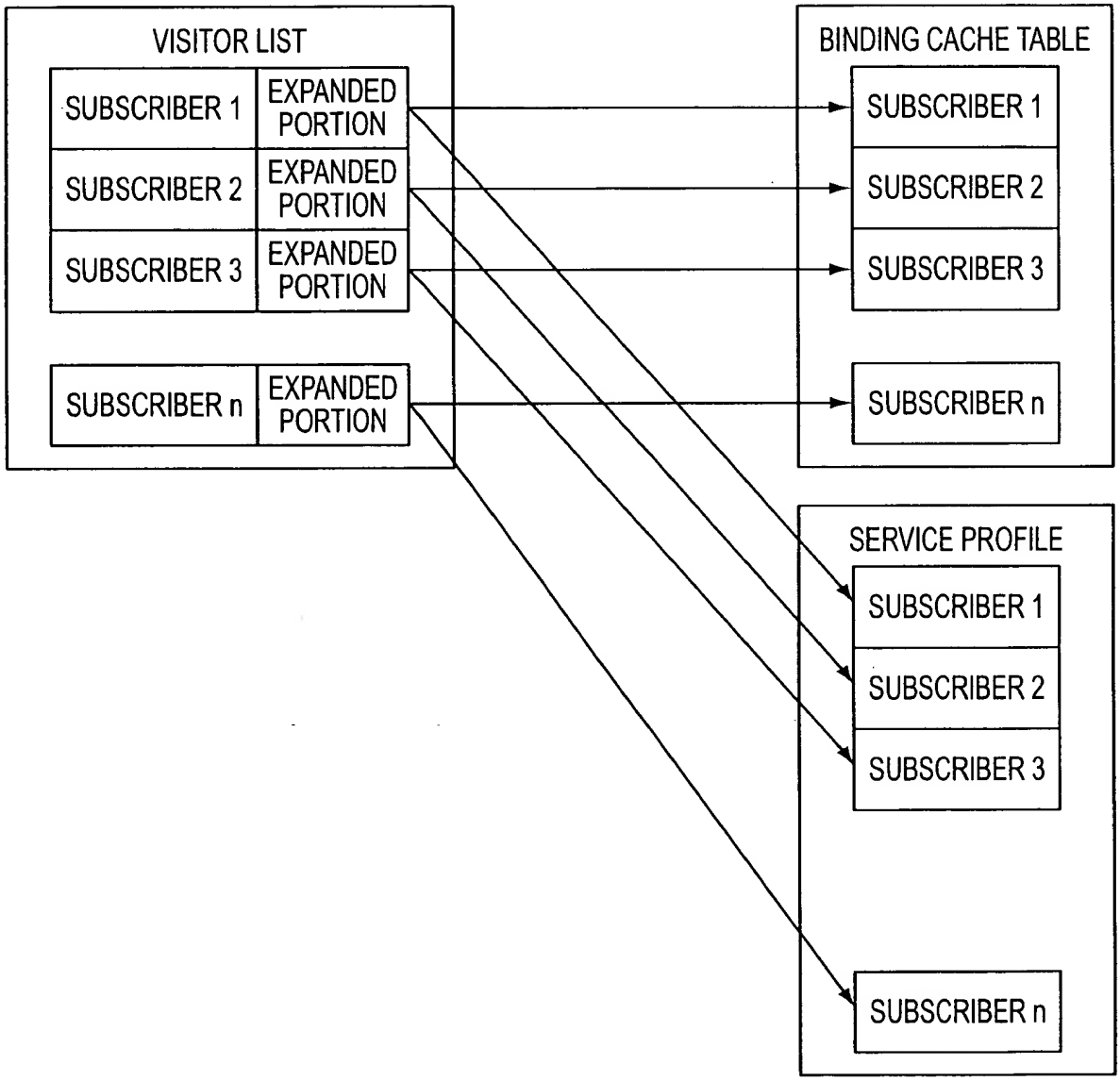
VISITOR LIST
SUBSCRIBER 1
EXPANDED PORTION
SUBSCRIBER 2
EXPANDED PORTION
SUBSCRIBER 3
EXPANDED PORTION
SUBSCRIBER n
EXPANDED PORTION
BINDING CACHE TABLE
SUBSCRIBER 1
SUBSCRIBER 2
SUBSCRIBER 3
SUBSCRIBER n
SERVICE PROFILE
SUBSCRIBER 1
SUBSCRIBER 2
SUBSCRIBER 3
SUBSCRIBER n

FIG. 7

T050020 T6692760

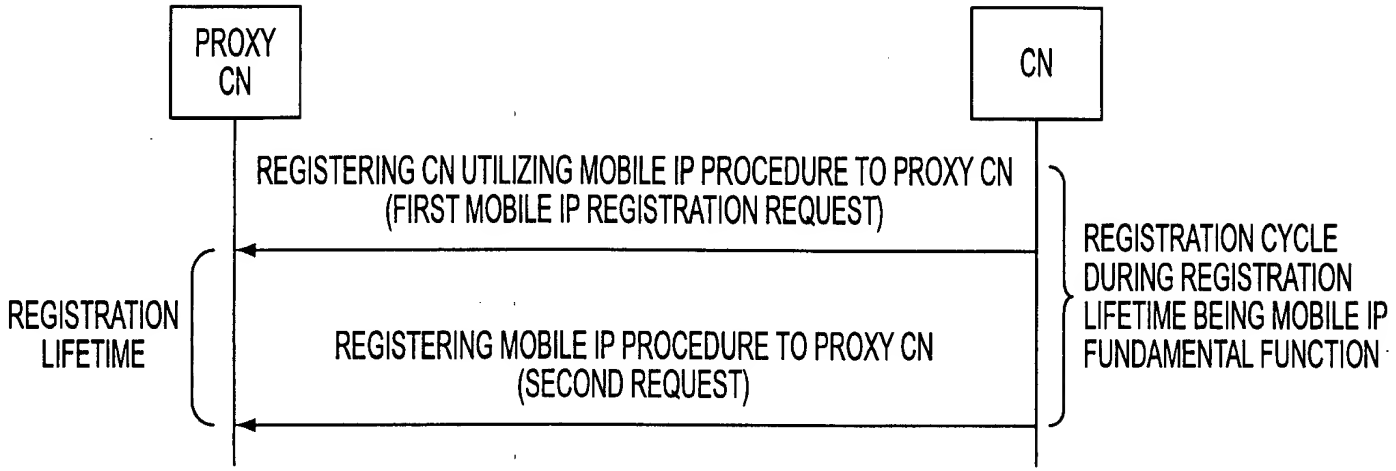

FIG. 8

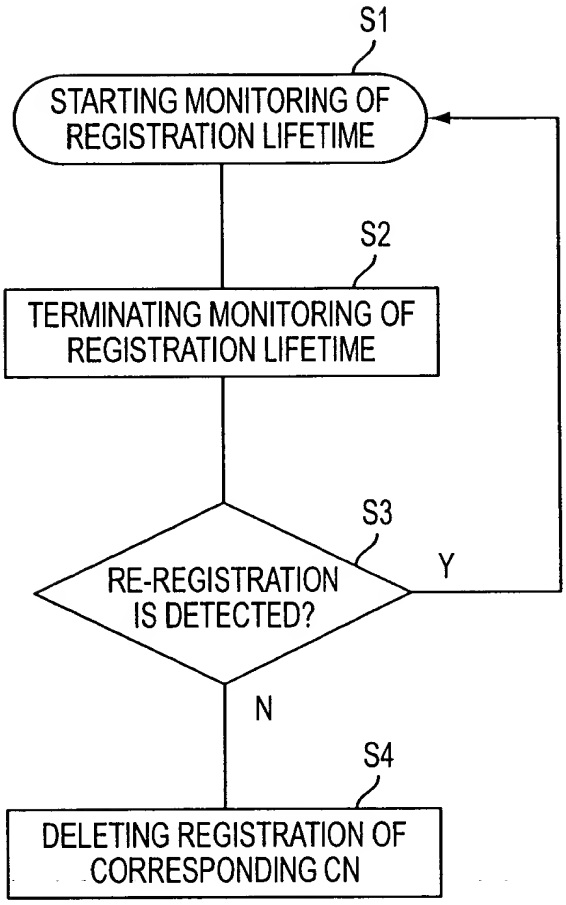
S1
STARTING MONITORING OF REGISTRATION LIFETIME
S2
TERMINATING MONITORING OF REGISTRATION LIFETIME
S3
RE-REGISTRATION IS DETECTED?
Y
N
S4
DELETING REGISTRATION OF CORRESPONDING CN

FIG. 9

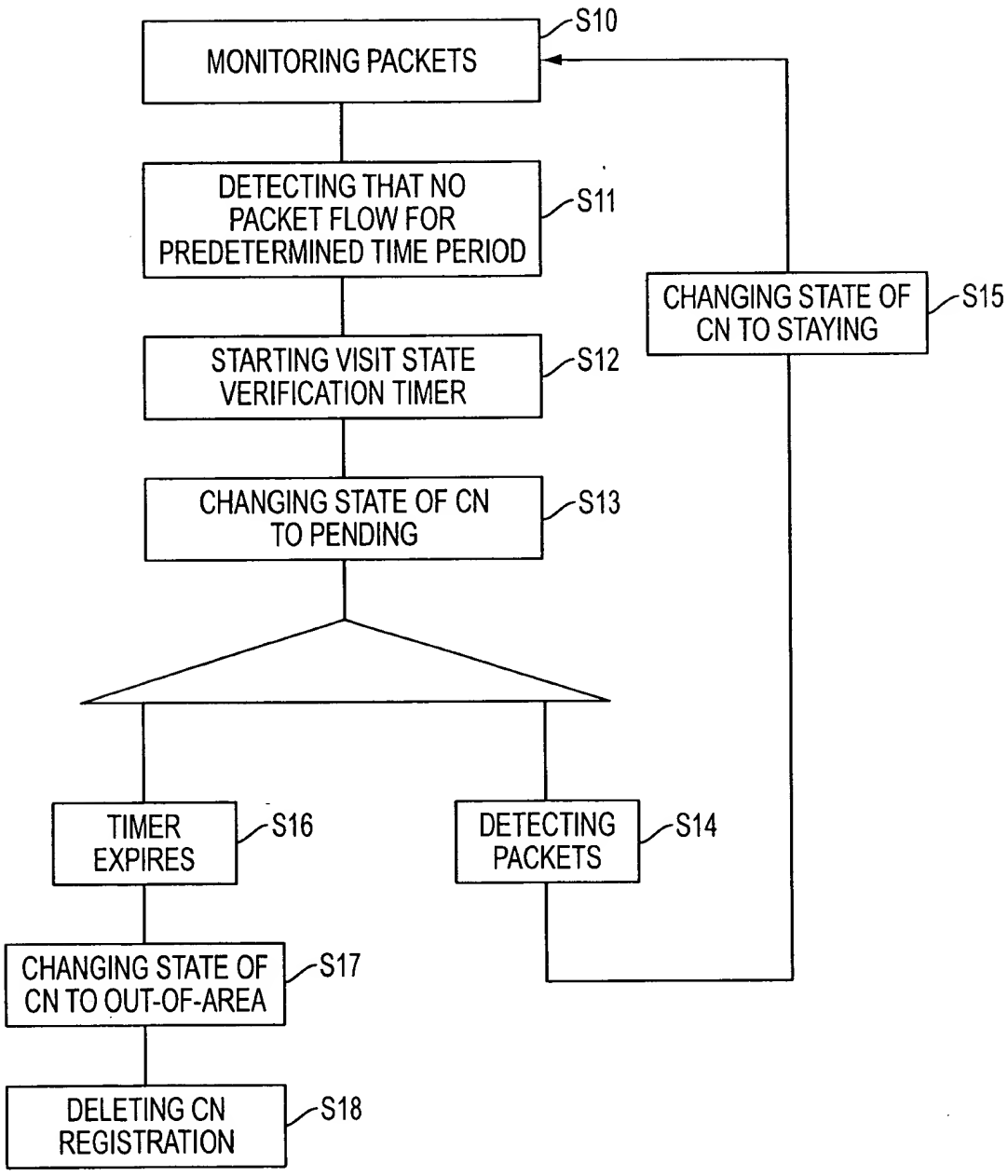
MONITORING PACKETS
S10
DETECTING THAT NO PACKET FLOW FOR PREDETERMINED TIME PERIOD
S11
STARTING VISIT STATE VERIFICATION TIMER
S12
CHANGING STATE OF CN TO PENDING
S13
TIMER EXPIRES
S16
DETECTING PACKETS
S14
CHANGING STATE OF CN TO OUT-OF-AREA
S17
DELETING CN REGISTRATION
S18
CHANGING STATE OF CN TO STAYING
S15

FIG. 10

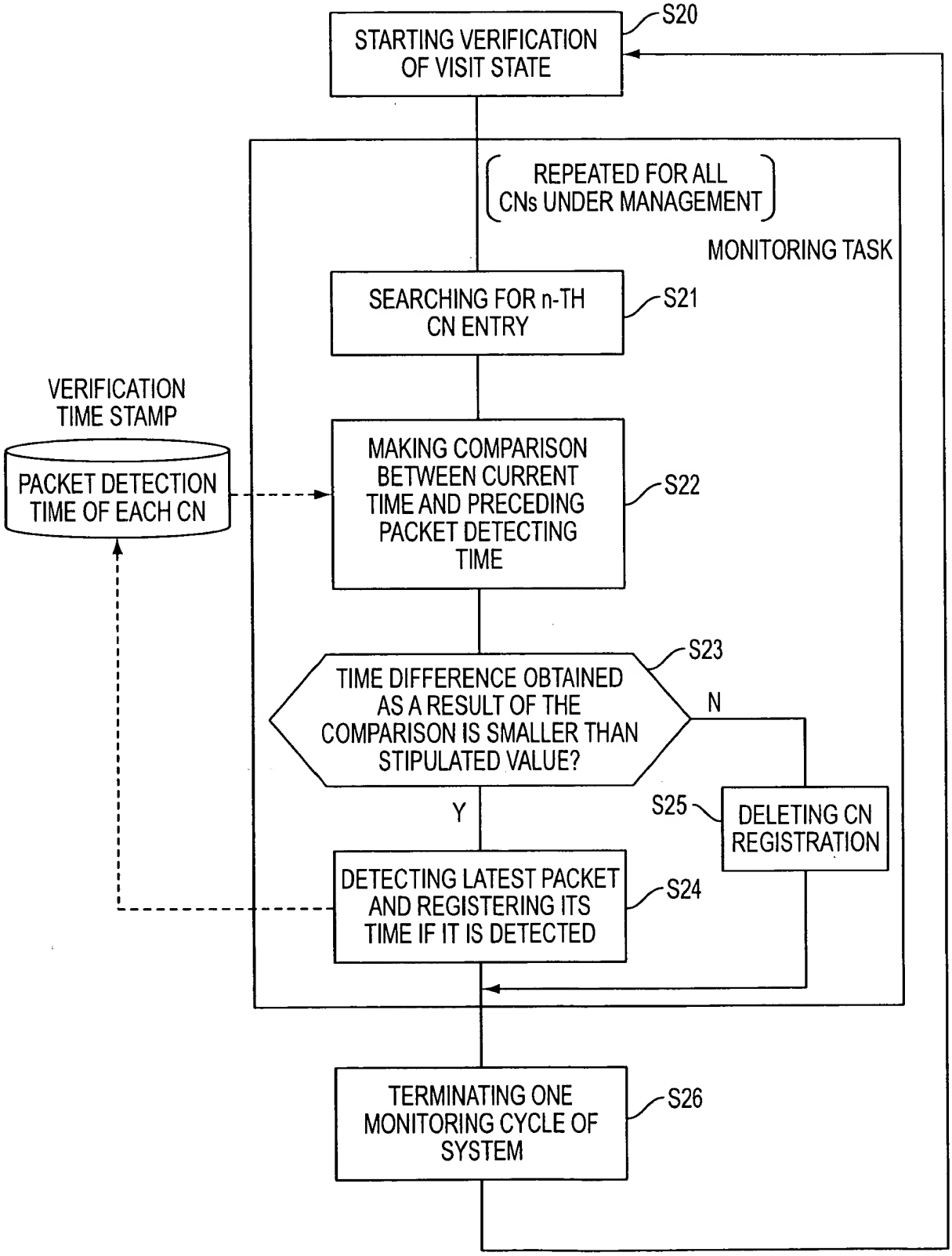
STARTING VERIFICATION OF VISIT STATE
S20
REPEATED FOR ALL CNs UNDER MANAGEMENT
MONITORING TASK
SEARCHING FOR n-TH CN ENTRY
S21
VERIFICATION TIME STAMP
PACKET DETECTION TIME OF EACH CN
MAKING COMPARISON BETWEEN CURRENT TIME AND PRECEDING PACKET DETECTING TIME
S22
TIME DIFFERENCE OBTAINED AS A RESULT OF THE COMPARISON IS SMALLER THAN STIPULATED VALUE?
S23
N
Y
S25
DELETING CN REGISTRATION
DETECTING LATEST PACKET AND REGISTERING ITS TIME IF IT IS DETECTED
S24
TERMINATING ONE MONITORING CYCLE OF SYSTEM
S26

FIG. 11

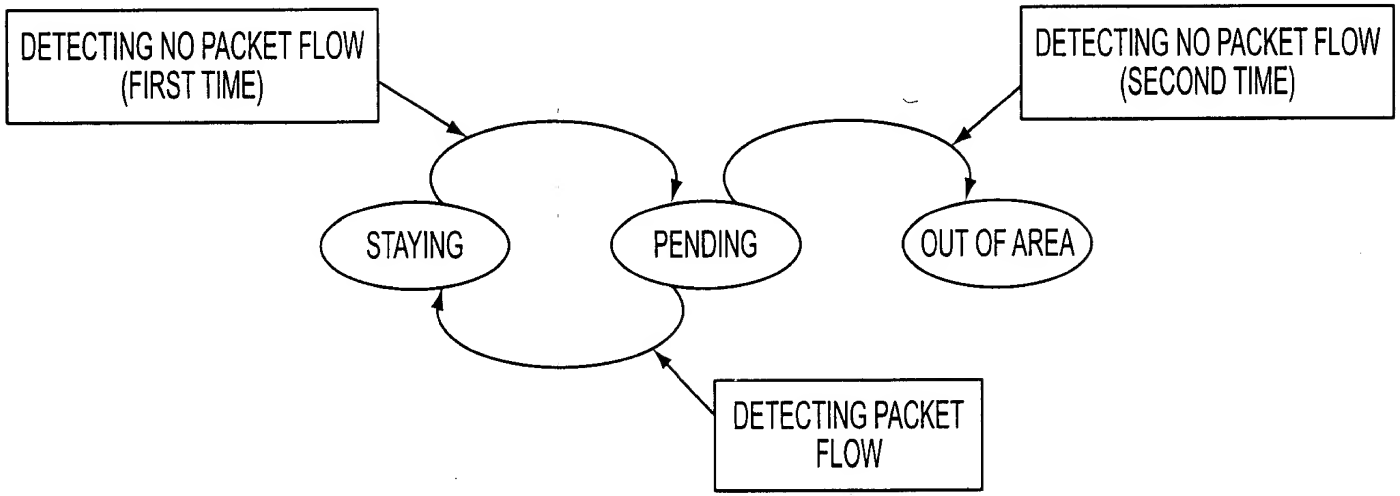
DETECTING NO PACKET FLOW (FIRST TIME)
DETECTING NO PACKET FLOW (SECOND TIME)
STAYING
PENDING
OUT OF AREA
DETECTING PACKET FLOW

FIG. 12

TOSHIBA T6697660

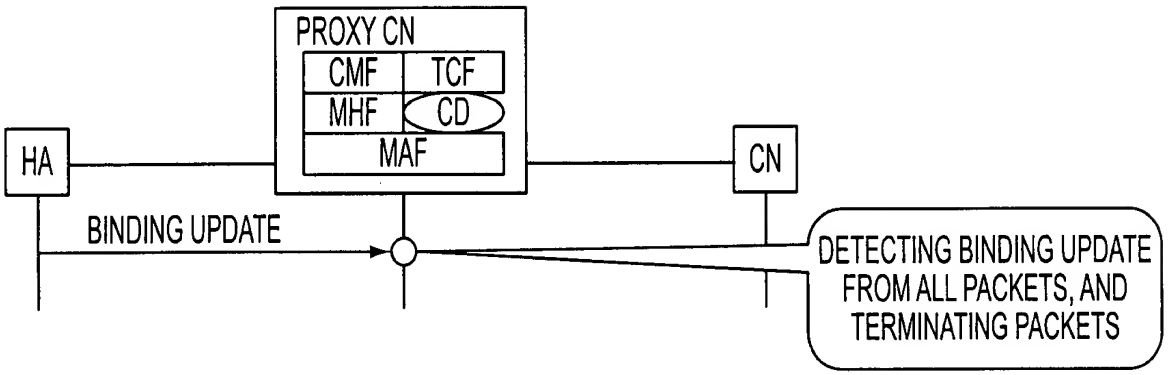

FIG. 13

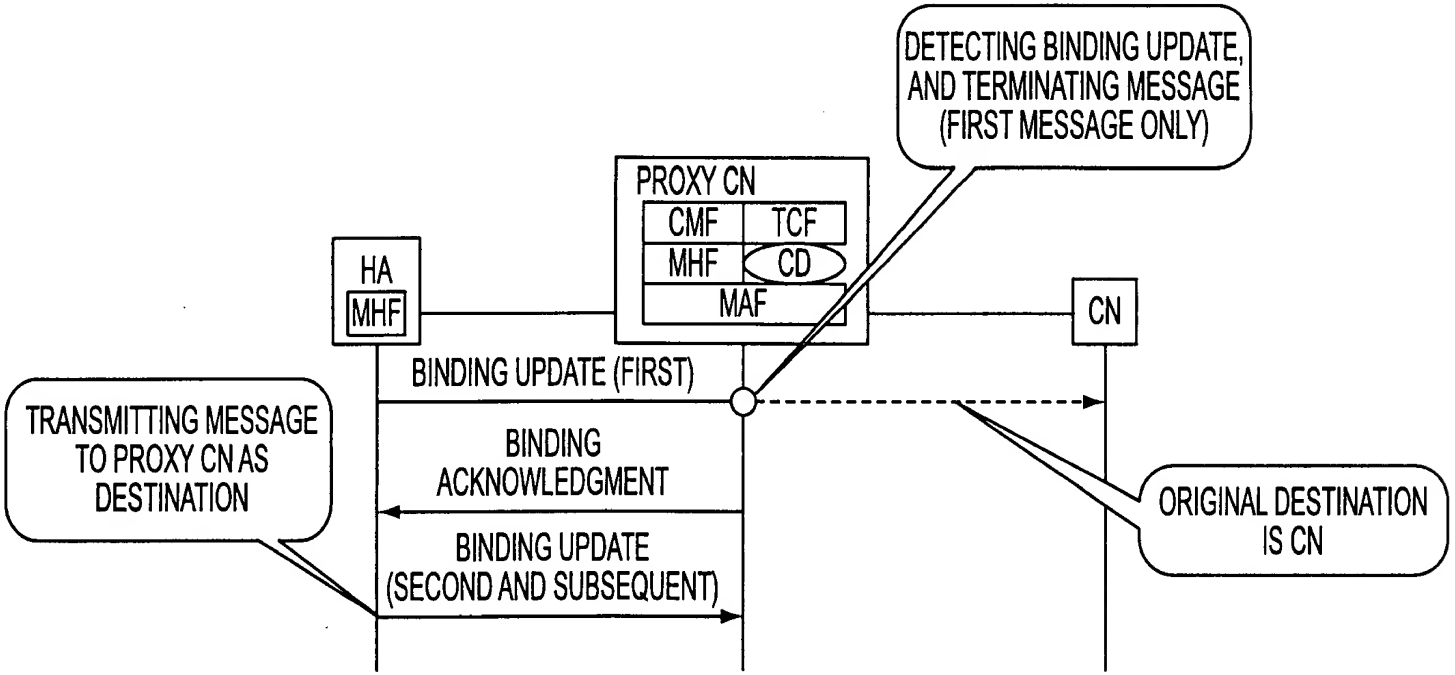
DETECTING BINDING UPDATE, AND TERMINATING MESSAGE (FIRST MESSAGE ONLY)
PROXY CN
CMF
TCF
MHF
CD
MAF
HA
MHF
CN
BINDING UPDATE (FIRST)
TRANSMITTING MESSAGE TO PROXY CN AS DESTINATION
BINDING ACKNOWLEDGMENT
ORIGINAL DESTINATION IS CN
BINDING UPDATE (SECOND AND SUBSEQUENT)

FIG. 14

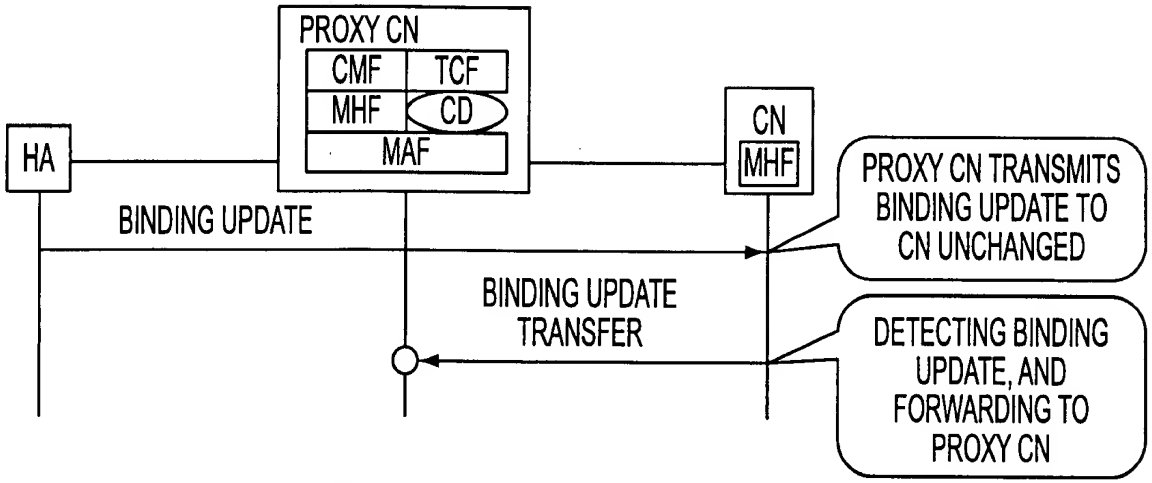
PROXY CN
CMF
TCF
MHF
CD
MAF
HA
CN
MHF
BINDING UPDATE
PROXY CN TRANSMITS BINDING UPDATE TO CN UNCHANGED
BINDING UPDATE TRANSFER
DETECTING BINDING UPDATE, AND FORWARDING TO PROXY CN

FIG. 15

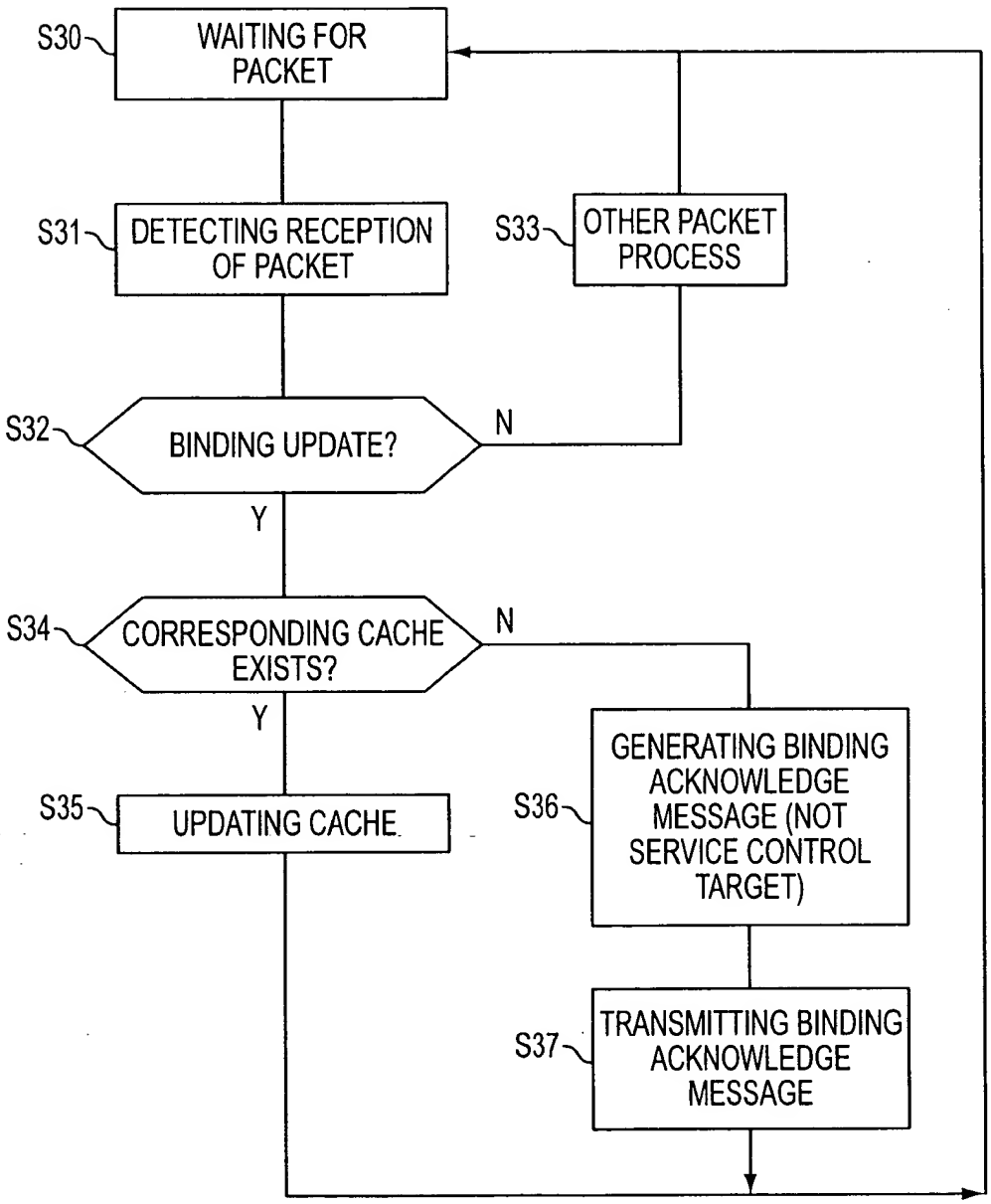
S30
WAITING FOR PACKET
S31
DETECTING RECEPTION OF PACKET
S33
OTHER PACKET PROCESS
S32
BINDING UPDATE?
N
Y
S34
CORRESPONDING CACHE EXISTS?
N
Y
S35
UPDATING CACHE
S36
GENERATING BINDING ACKNOWLEDGE MESSAGE (NOT SERVICE CONTROL TARGET)
S37
TRANSMITTING BINDING ACKNOWLEDGE MESSAGE

FIG. 16

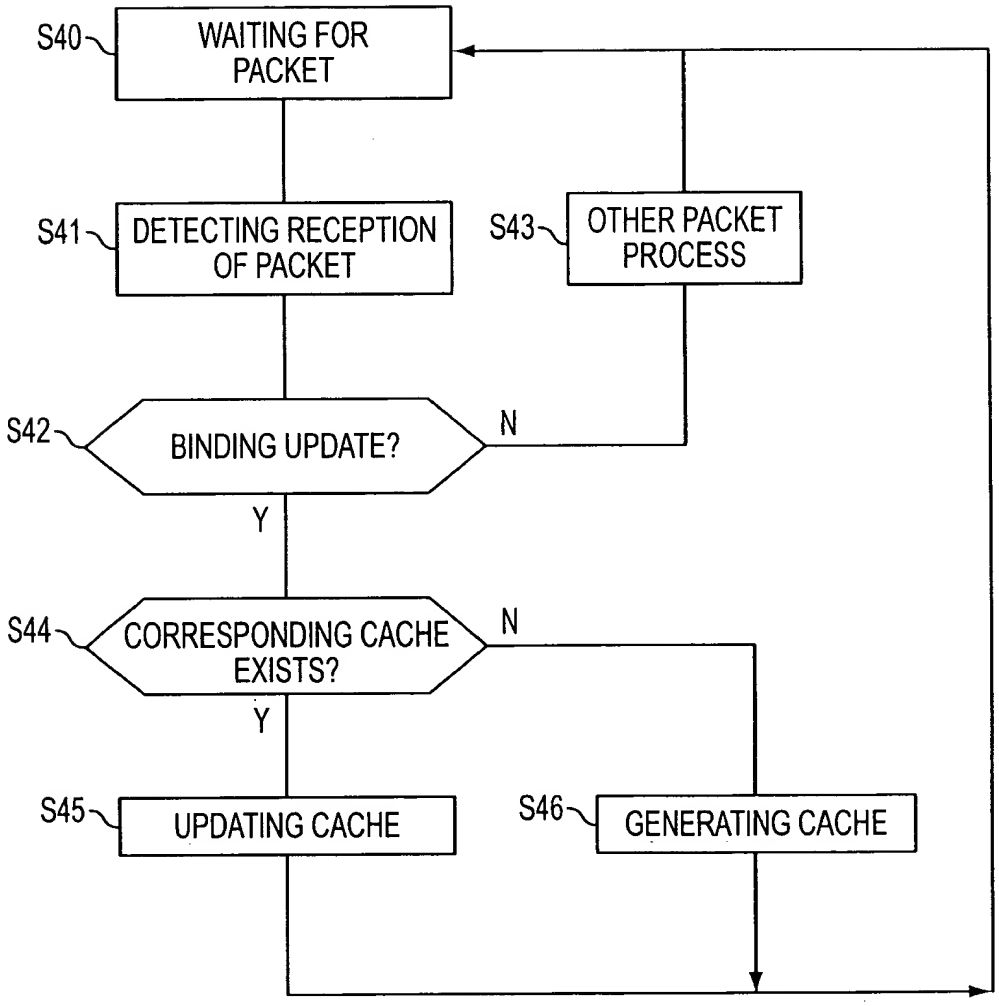
S40
WAITING FOR PACKET
S41
DETECTING RECEPTION OF PACKET
S43
OTHER PACKET PROCESS
S42
BINDING UPDATE?
N
Y
S44
CORRESPONDING CACHE EXISTS?
N
Y
S45
UPDATING CACHE
S46
GENERATING CACHE

FIG. 17

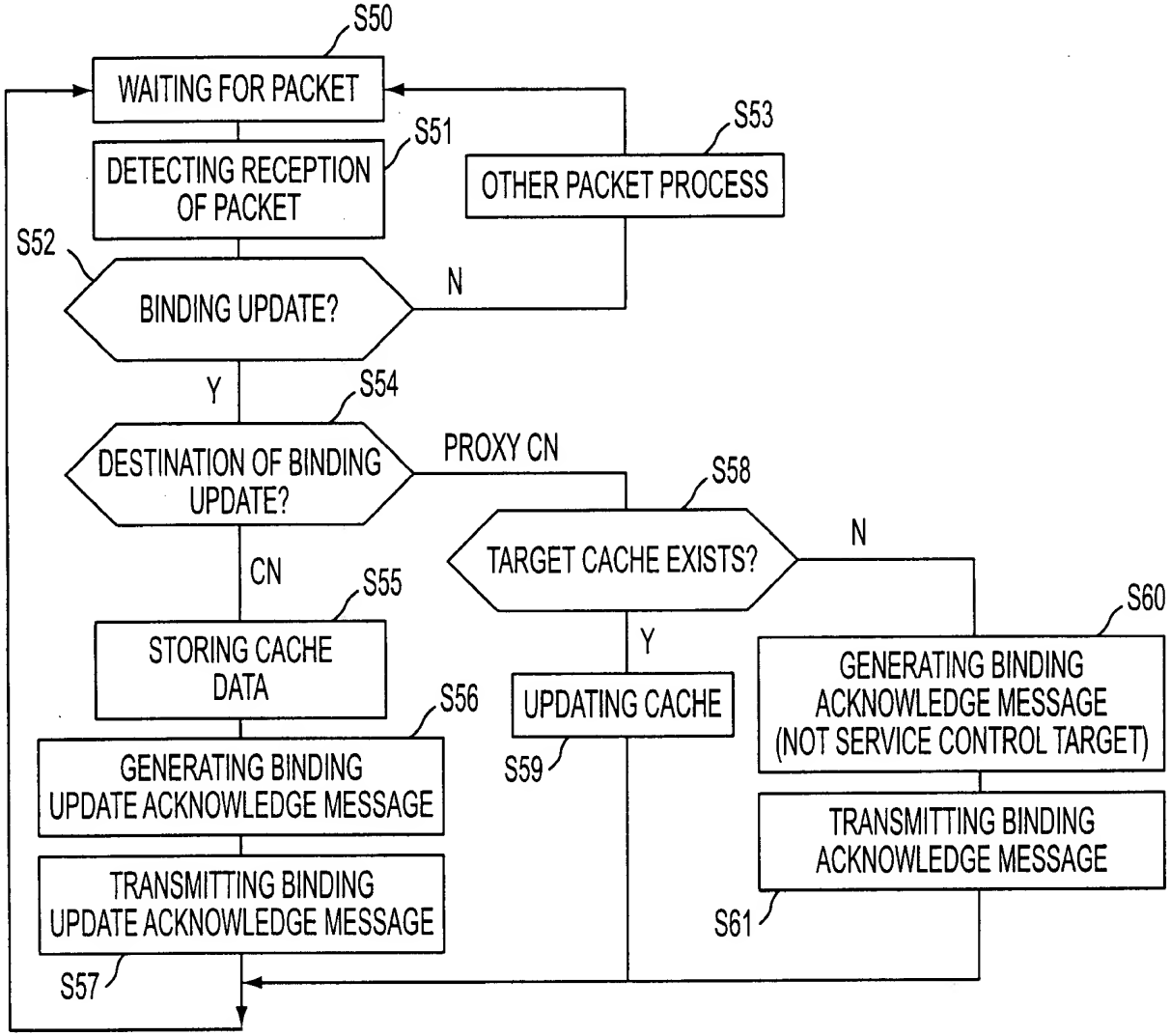
S50
WAITING FOR PACKET
S51
DETECTING RECEPTION OF PACKET
S53
OTHER PACKET PROCESS
S52
BINDING UPDATE?
N
Y
S54
DESTINATION OF BINDING UPDATE?
PROXY CN
S58
TARGET CACHE EXISTS?
N
CN
S55
STORING CACHE DATA
Y
S60
GENERATING BINDING ACKNOWLEDGE MESSAGE (NOT SERVICE CONTROL TARGET)
S56
GENERATING BINDING UPDATE ACKNOWLEDGE MESSAGE
UPDATING CACHE
S59
TRANSMITTING BINDING ACKNOWLEDGE MESSAGE
TRANSMITTING BINDING UPDATE ACKNOWLEDGE MESSAGE
S61
S57

FIG. 18

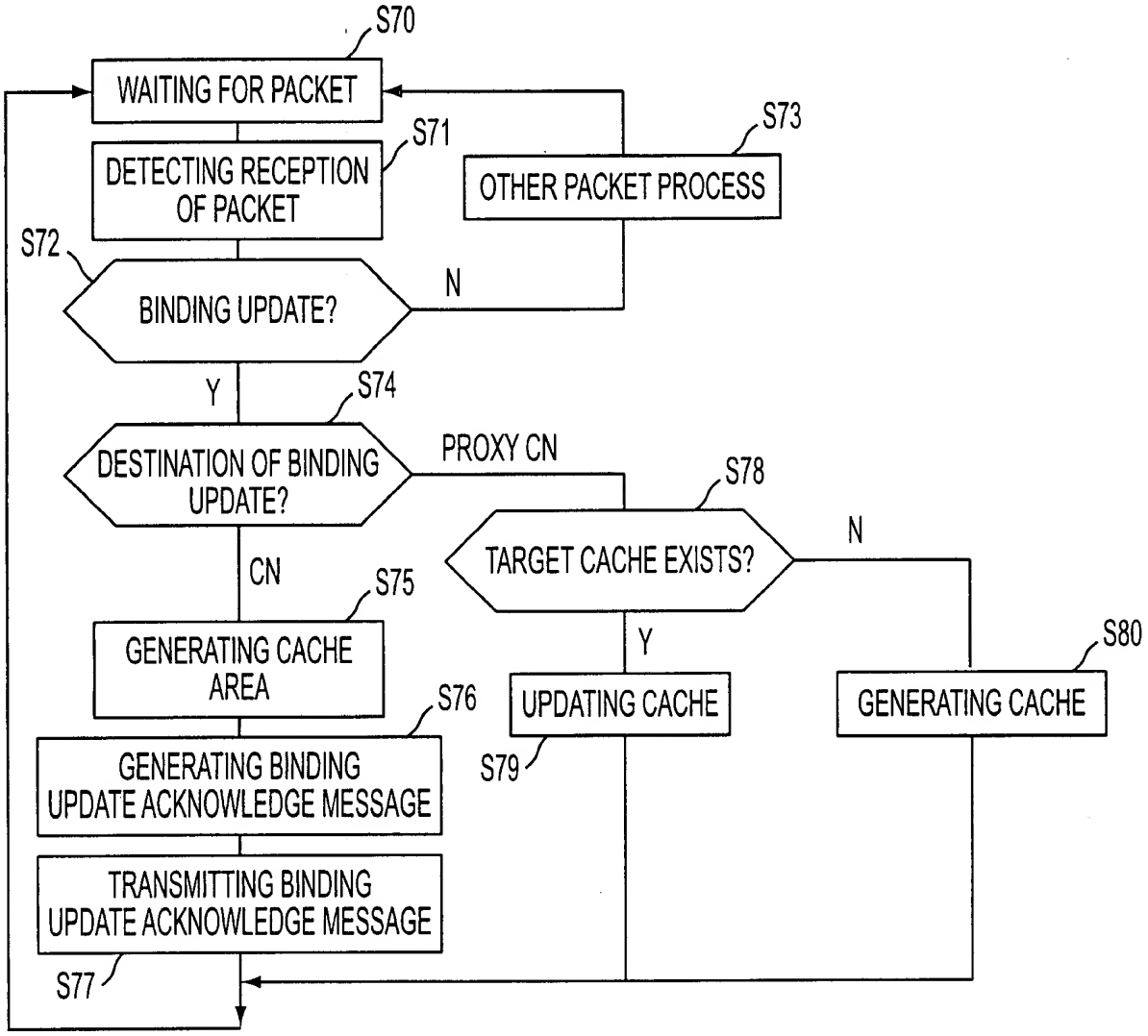
S70
WAITING FOR PACKET
S71
DETECTING RECEPTION OF PACKET
S73
OTHER PACKET PROCESS
S72
BINDING UPDATE?
N
Y
S74
DESTINATION OF BINDING UPDATE?
PROXY CN
S78
TARGET CACHE EXISTS?
N
CN
S75
GENERATING CACHE AREA
Y
S80
GENERATING CACHE
S76
UPDATING CACHE
S79
GENERATING BINDING UPDATE ACKNOWLEDGE MESSAGE
TRANSMITTING BINDING UPDATE ACKNOWLEDGE MESSAGE
S77

FIG. 19

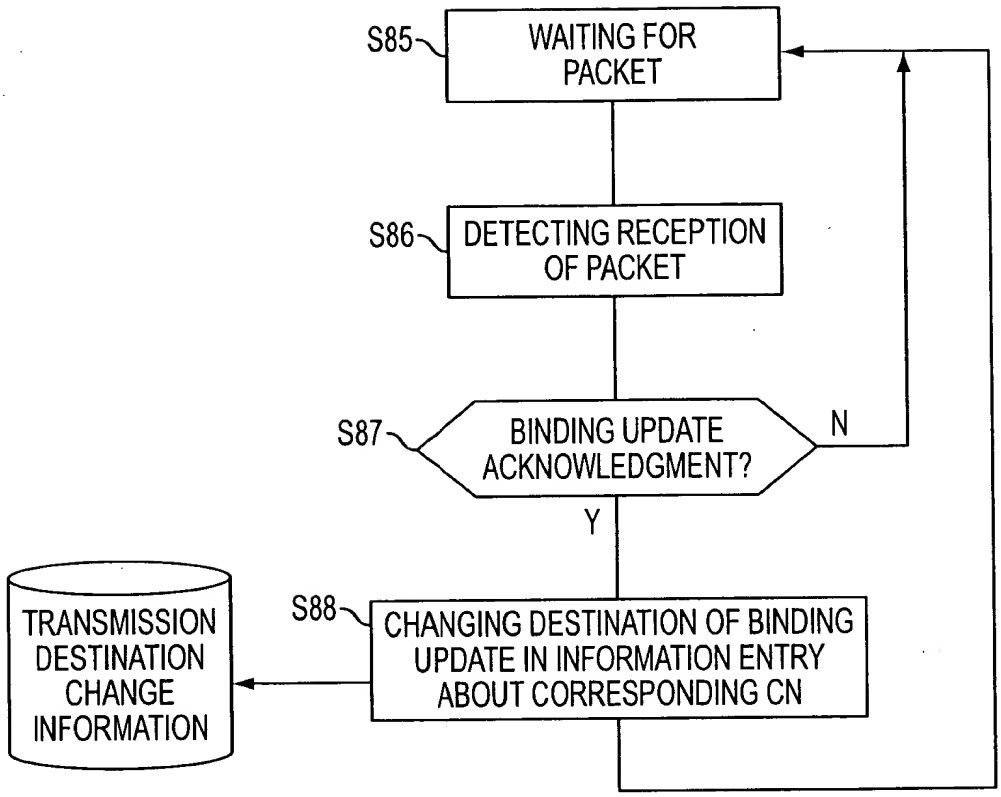
S85
WAITING FOR PACKET
S86
DETECTING RECEPTION OF PACKET
S87
BINDING UPDATE ACKNOWLEDGMENT?
N
Y
S88
CHANGING DESTINATION OF BINDING UPDATE IN INFORMATION ENTRY ABOUT CORRESPONDING CN
TRANSMISSION DESTINATION CHANGE INFORMATION

FIG. 20

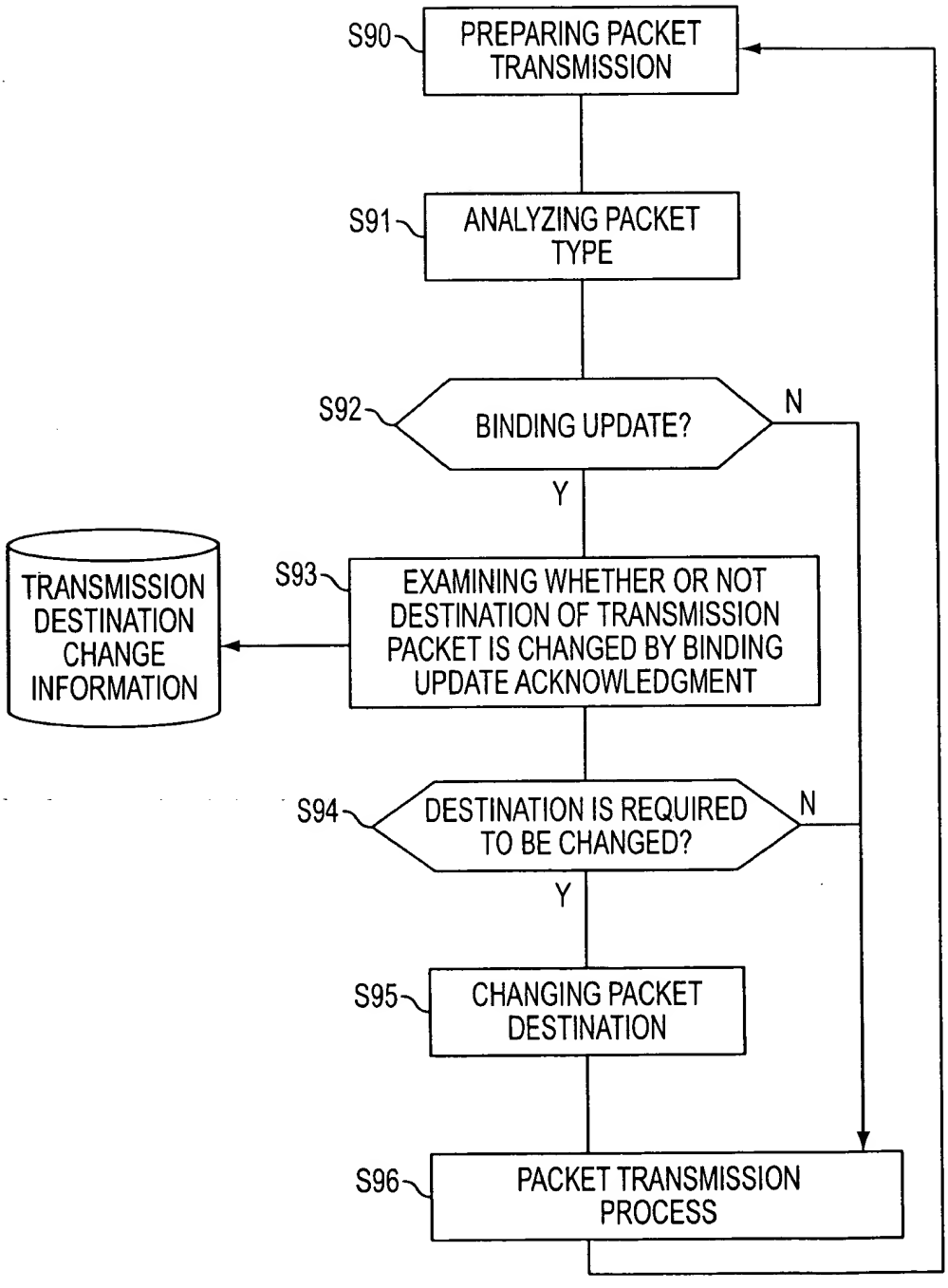
S90
PREPARING PACKET TRANSMISSION
S91
ANALYZING PACKET TYPE
S92
BINDING UPDATE?
N
Y
S93
EXAMINING WHETHER OR NOT DESTINATION OF TRANSMISSION PACKET IS CHANGED BY BINDING UPDATE ACKNOWLEDGMENT
TRANSMISSION DESTINATION CHANGE INFORMATION
S94
DESTINATION IS REQUIRED TO BE CHANGED?
N
Y
S95
CHANGING PACKET DESTINATION
S96
PACKET TRANSMISSION PROCESS

FIG. 21

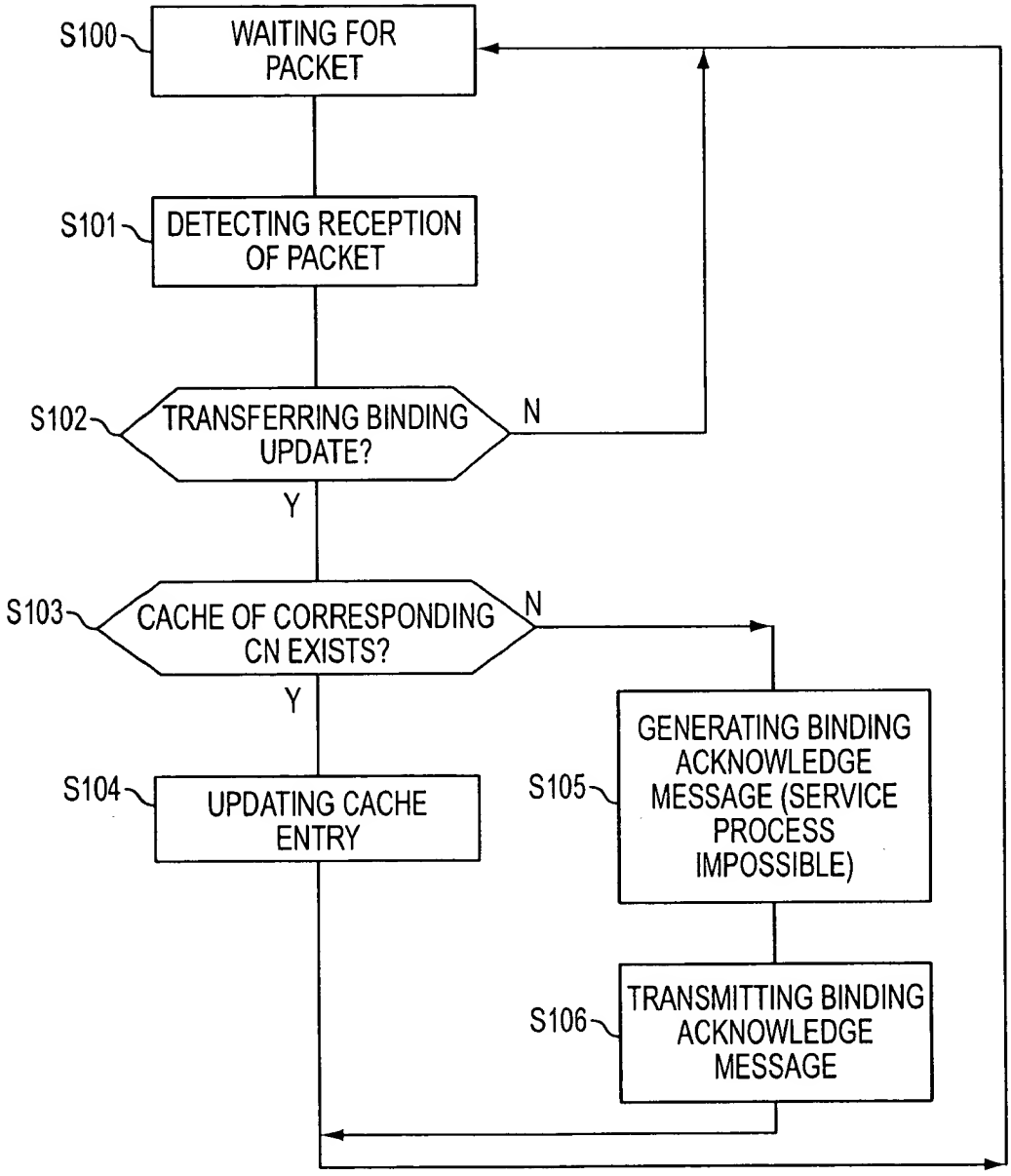
S100
WAITING FOR PACKET
S101
DETECTING RECEPTION OF PACKET
S102
TRANSFERRING BINDING UPDATE?
N
Y
S103
CACHE OF CORRESPONDING CN EXISTS?
N
Y
S104
UPDATING CACHE ENTRY
S105
GENERATING BINDING ACKNOWLEDGE MESSAGE (SERVICE PROCESS IMPOSSIBLE)
S106
TRANSMITTING BINDING ACKNOWLEDGE MESSAGE

FIG. 22

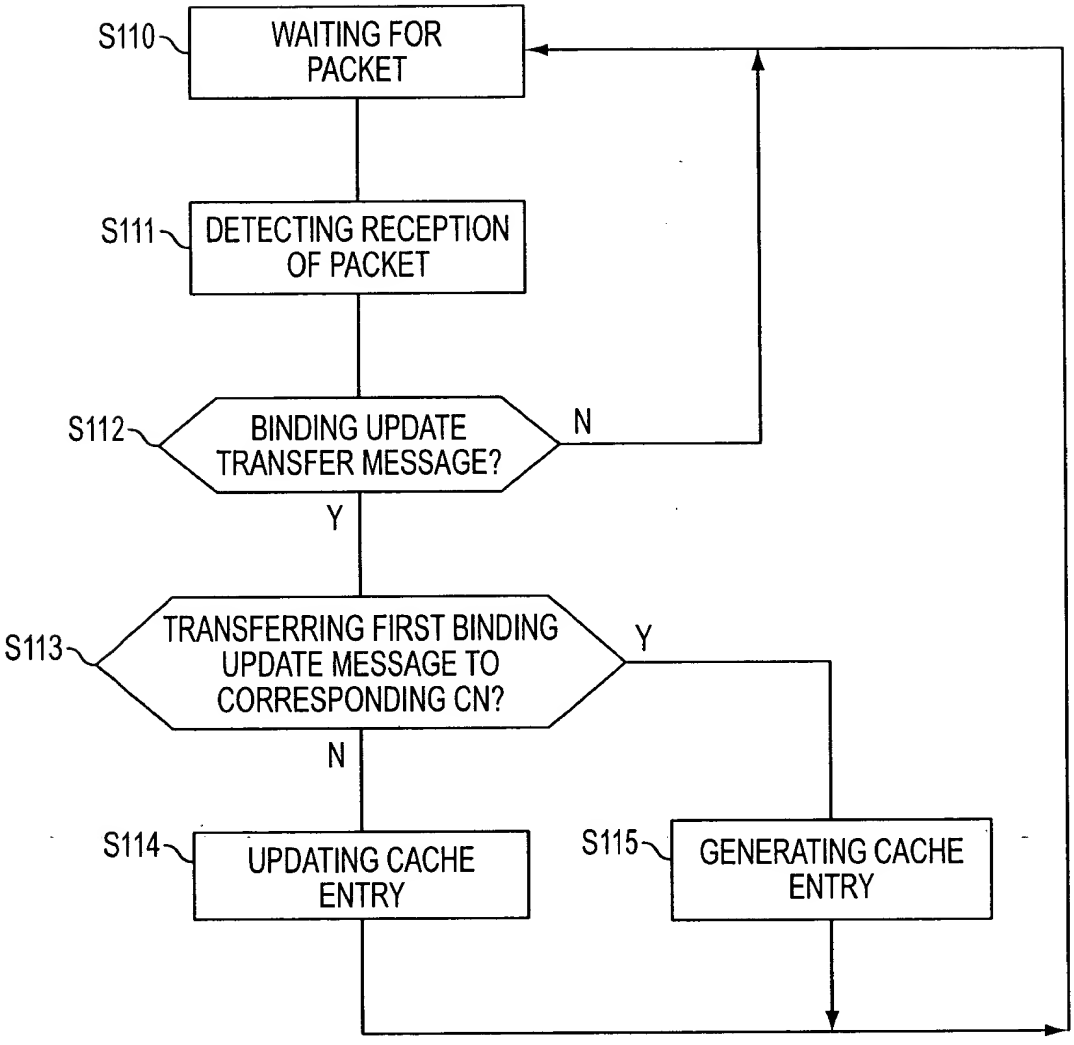
S110
WAITING FOR PACKET
S111
DETECTING RECEPTION OF PACKET
S112
BINDING UPDATE TRANSFER MESSAGE?
N
Y
S113
TRANSFERRING FIRST BINDING UPDATE MESSAGE TO CORRESPONDING CN?
Y
N
S114
UPDATING CACHE ENTRY
S115
GENERATING CACHE ENTRY

FIG. 23

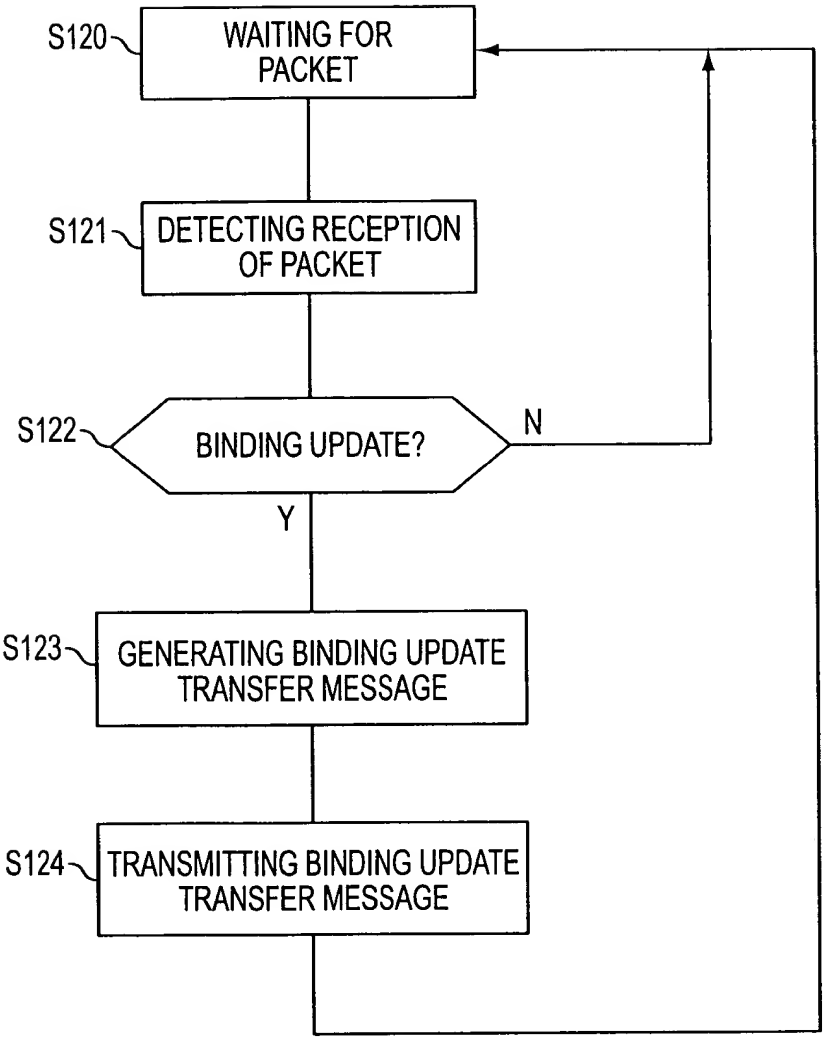
S120
WAITING FOR PACKET
S121
DETECTING RECEPTION OF PACKET
S122
BINDING UPDATE?
N
Y
S123
GENERATING BINDING UPDATE TRANSFER MESSAGE
S124
TRANSMITTING BINDING UPDATE TRANSFER MESSAGE

FIG. 24

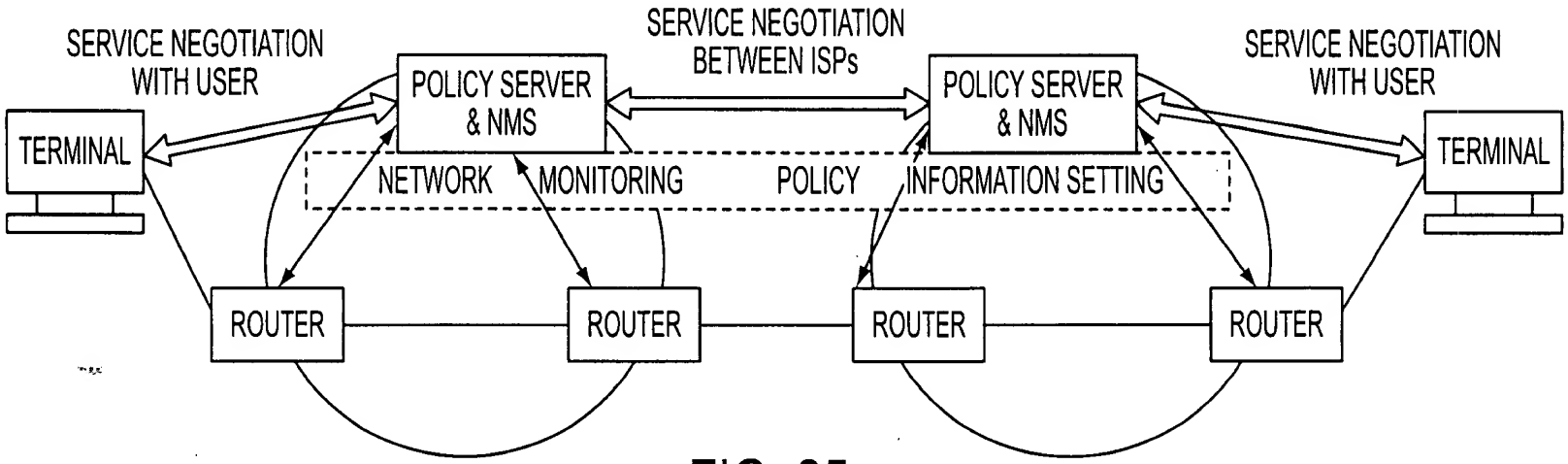
SERVICE NEGOTIATION WITH USER
SERVICE NEGOTIATION BETWEEN ISPs
SERVICE NEGOTIATION WITH USER
TERMINAL
POLICY SERVER & NMS
POLICY SERVER & NMS
TERMINAL
NETWORK MONITORING
POLICY INFORMATION SETTING
ROUTER
ROUTER
ROUTER
ROUTER

FIG. 25